Techniques for tracking stem cells necessary for possible therapies

Posted: June 13, 2011

Created: 13/06/2011 - 11:13

Last week The Scientist carried a story addressing a topic near and dear to the heart of anyone trying to develop a therapy based on transplanting stem cells, whether they are embryonic, adult, or iPS cells: Where do the cells go once they are transplanted?

The problem is this - if you, as a scientist, transplant stem cells near some damage that you are hoping they will repair, you've got to hope those cells actually make it to the damaged tissue. If they make a run for the liver when you are trying to treat the heart, or simply sit in a lump where you implanted them, those cells aren't going to fulfill their mission.

The story quotes CIRM grantee Joseph Wu of Stanford University who has SEED and Basic Biology III Awards to detect stem cells implanted into the heart and to develop stem cell transplantation therapies for hypertrophic cardiomyopathy.

> "If you want to understand what happens to these stem cells, it's important to track the fate of these cells without having to kill the animal," says Joseph Wu, a cardiologist at Stanford University School of Medicine in Palo Alto, California. Stem cell transplants may settle down, proliferate, and differentiate as desired; they may form dangerous tumors; or they may simply falter and die.

The issue is also one CIRM grantee Paul Knoepfler of the University of California, Davis, touched on in his blog last week, saying:

> Once these cells, which have spent weeks in a lab environment, are injected into a person, what happens next?

This is arguably the most important question in the regenerative medicine field, but there are few answers. We are literally mostly in the dark about what cells do after transplant, but there are some things that can be predicted pretty confidently.

He goes on to discuss some of what's known about the issue using Geron's clinical trial as an example.

In their article, the Scientist discusses a few techniques scientists are using (including some nice images) to address the question of where the cells go. The story includes a technique being used by CIRM grantee Eduardo Marban at Cedars-Sinai Medical Institute, who has a Disease Team Award to develop a therapy for heart disease.

This is the type of research that comes to mind when people who don't follow the science comment on the lack of cures. CIRM is funding a broad range of science, some of which is primarily dedicated developing new therapies, and some of which is working to understand these kinds of basic questions that need to be addressed before those therapies can become widespread.

A.A.

Tags: Marban, Disease Team, Basic Biology, Knoepfler, Stanford University, Wu, SEED